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TALKING TURKEY

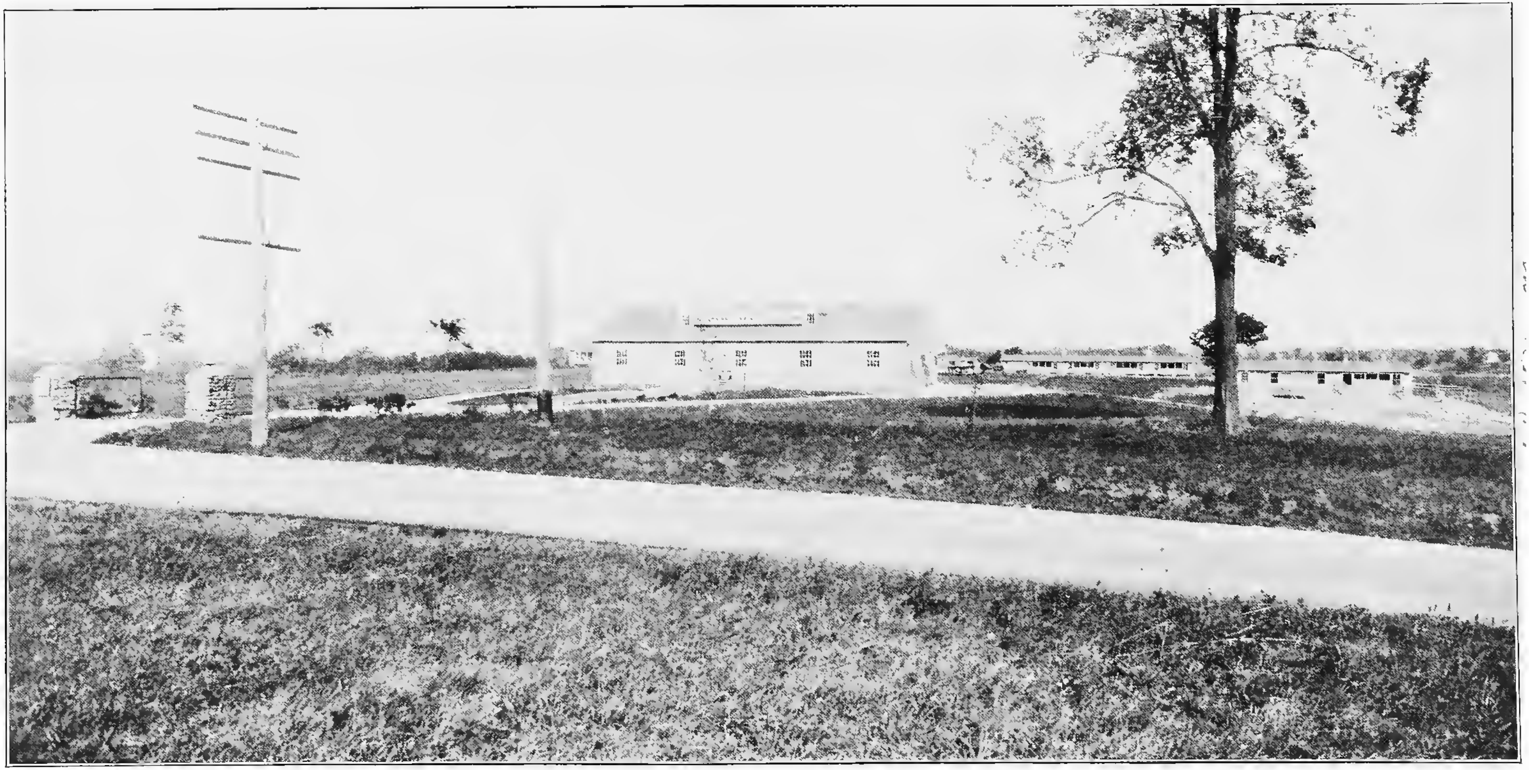
W. A. BILLINGS
Minnesota Experiment Station

and

C. E. LEE
Director of Poultry Research

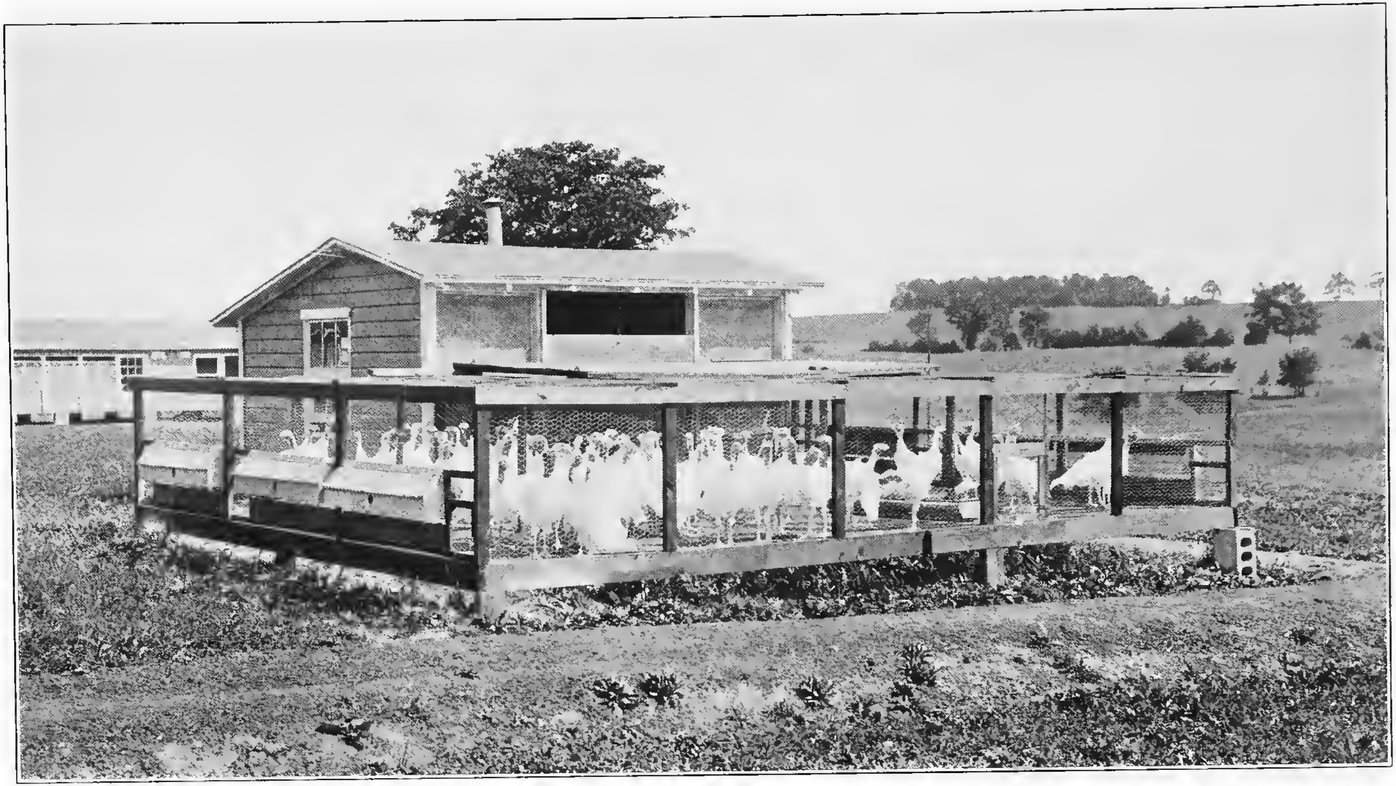
(Fourth Edition Revised)

The Beacon Milling Company, Inc.
Cayuga, New York



ENTRANCE OF BEACON POULTRY RESEARCH FARM, CAYUGA, N. Y.

Sixty Acre Modern Plant devoted to Research Work for the betterment of Beacon Feeds and Improved Poultry Management. Showing New Headquarters and Battery Building built September, 1932, to replace original building destroyed by fire August 17, 1932.



White Holland Turkeys at Beacon Poultry Research Farm, Cayuga, N. Y., showing method of rearing on wire platforms attached to brooder house. House 12' x 12', platform 16' x 20', room for 75 turkeys to maturity. At 13 weeks of age these (May 25th hatch) birds averaged 8½ lbs. each and had consumed 3½ lbs. of feed for each pound of meat produced. Nov. 15th they averaged 14 lbs., exceeding birds on range by one pound per bird.

Talking Turkey

FOR the last 10 years or more efforts have been made to raise turkeys by so-called artificial means. In the main most of the trials have been successful. The last two or three years the Minnesota Experiment Station has made tests of artificial incubation, brooding, and comparatively close confinement of the flocks. The success has been gratifying. This work together with that of other stations has led this department to advocate similar methods on the farm.

Experience at the Beacon Poultry Research Farm and among large Eastern turkey growers has been similar. **Artificial incubation and confinement rearing are now commonly used in the East, where turkey growing has had a remarkable come-back with the introduction of modern sanitary rearing.**

Turkey History —The centers of turkey population are constantly shifting. First one state and then another has led in production. Owing to these waves in production in the various states we hear from time to time that the turkey is on its way to become extinct. If you care to travel back a few years, the noticeable thing is that the industry seems to be constantly shifting to a new and more or less virgin territory—that is, so far as turkey growing is concerned. The middle and far Western states are now raising turkeys heavily. The question is then — How long will they continue to be profitable?

In some sections of the United States a farmer will say, "We used to raise a lot of turkeys but we can't do it on this farm any more." This in brief has been the general opinion of the majority of ex-turkey raisers. The chicken population has always been more or less stationary as to distribution. At any rate it is generally conceded that it is not especially difficult to raise a few hens. Raising turkeys never has been standardized as has raising chickens. It has been a "hit or miss" affair with emphasis on the "miss." There is little literature on turkeys. Until the last few years, little or no experimental work has been done at the experiment stations on the important subjects of incubating, brooding and feeding.

A farmer said the other day that he would like to raise a few turkeys but he didn't see how he could very well because he didn't have any trees on the farm. Another farmer doesn't like them because they get him into trouble with his neighbors.

Shooting the Red —Often you hear the statement that after the birds "shoot the red" the chances are better to avoid losses from any of the various diseases. This is a fairy tale. They will die of blackhead, become infested with lice or have any of the diseases of turkeys regardless of the state of "red." There is about as much truth in this statement as there would be in following out the common practice of giving chickens cayenne pepper to make them lay more eggs in the winter months.

Are They Wild —The whole field of turkey husbandry is crowded with superstitious beliefs about turkeys. Some say they cannot be domesticated and that they are as wild as hawks and must be kept as nearly like their wild ancestors as possible. Turkeys are not wild. They are easily domesticated. If chickens were encouraged to be wanderers as turkeys are, we would not call them domesticated either. Turkeys are docile and gentle by nature. They respond quickly and thrive in domestication. Instead of gradually making it easier for turkeys to stand confinement we have deliberately bred for wildness, even to the extent of introducing wild blood occasionally. The wild boar doesn't stand confinement gracefully, but we have the pig family pretty well satisfied with their lot now.

Become Turkey Wise —Before trying to raise turkeys, get all the information you can about them. Learn what diseases they are likely to have and be able to recognize them when they occur. For example, blackhead is an important disease of turkeys. We know of hundreds of turkey raisers who do not know that this disease has nothing to do with the color of the bird's head. Another thing, don't try to go in for turkey raising blindfolded. Don't start in too heavily. Begin on a small scale and grow up. You will learn a lot more than any one else can tell you in a booklet of this kind. We are trying to point out only the biggest pitfalls. There are others, too. It is quite generally known that poults suffer from lice but nothing is done about it. Recently on a farm visit we found a flock in which there had been many deaths. We suspected blackhead but were disappointed. The birds were simply walking off with lice.

Don't be Frightened —When one starts to read the available literature on turkeys he is confronted with varying opinions on this subject and that. As a general thing the differences are of minor importance. This little booklet aims to discuss with the reader quite informally the subject we are both interested in.

Don't be an "In and Outer" —To try anything new successfully you must approach it with an open mind. To make your turkey operations a success, a clear understanding of what is required is necessary. If you are interested enough to read this booklet through, you are making a start in the right direction. You can raise turkeys if you understand the difficulties and make an honest effort to overcome them. If you don't make a hundred per cent success the first season, don't quit. Perhaps you will have made some mistakes or tried to make some short cuts or thought some of the suggestions made to be unimportant.

Chickens and Turkeys Don't Mix —Why raise turkeys in confinement, anyway? In order to make ourselves clear we will have to understand the bane of all turkey growers — that is, this disease, blackhead. I do not mean to imply that other things do not kill turkeys. They do, but we can overcome the others easily.

Those readers who have had a good measure of success using their present methods will not want to change. Those who are disgusted with turkeys from previous experience, but are willing to try something new, will find the suggestions novel, perhaps, but the best part of it is — they are workable.

Here's the Plan —Any farmer will admit that turkeys usually bring a good price. The stickler is to have the turkeys to sell. Many have tried and failed with them for various reasons. Under the old system the business is too precarious to be attractive. Many people keep at it because the price stays good — otherwise they wouldn't fool with turkeys a minute. Even with a 50 per cent loss, turkeys have continued to pay a good profit during most years. The thing then to do is to reduce these losses from 50 and even 75 or 80 to perhaps as low as 10 to 20 per cent. We are going to attempt it by what are usually termed artificial means. Even with limited space it has been clearly demonstrated that **turkeys are easily domesticated and can be successfully raised in comparatively close confinement.**

This Idea is Not New —The idea is not new and neither is it original. For as long as 20 years turkeys have been artificially hatched and brooded. The infant mortality of baby turkeys is too large. These losses are sometimes due to mismanagement, faulty feeding, inconsiderate hen mothers, lice, mites, and last, but more to be dreaded than all the rest — blackhead. Blackhead is said by some writers to be a disease of old turkeys, while others point out that only the young are affected. As a matter of fact it is both. The young turkey may suffer most, and many losses due to blackhead pass unnoticed or unrecognized or are blamed to other causes, such as the "dew on the grass."

The thing that has had us all guessing the last few years is how to prevent and cure blackhead. This is the disease that has been the limiting factor in turkey raising. It has actually driven people out of the business. Perhaps they will not admit this. However, it is a good bet that they don't know the disease when it exists. Most growers don't. Now then, let's tackle this problem first and I think you will understand what this all means.

Heads Don't Get Black —The name of this disease does not truly describe the trouble because almost all turkeys' heads become dark colored when sick. Many farmers will say, "No, I haven't had this disease in my turkeys because their heads didn't get black." The color means nothing more than that the bird is off feed and the veins about the head become clogged with slow moving blood. It is not a bowel trouble. Of course, the birds have a greenish yellow diarrhea, but that is only a symptom, and not the disease itself.

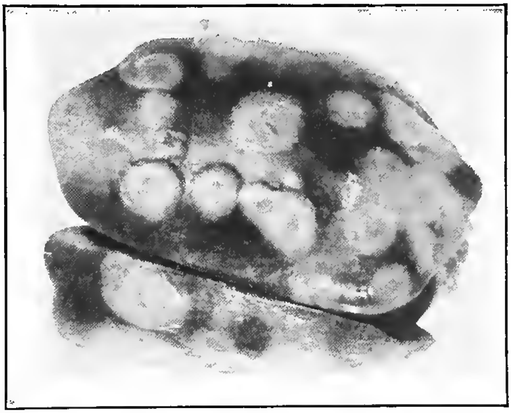
It is a truly contagious disease. It is caused by a parasite or germ that the bird likely takes in with its food and drink. This germ is able to live long periods in the soil and once a farm becomes infected it is hard to say just when the infection dies out.

Where the Worm Comes In —The last few years a lot of investigation on blackhead has been done at various institutions. Much has been learned and we have still more to find out. We have discovered, however, that it is well nigh impossible to raise turkeys and chickens together. The small intestinal worm of chickens often acts as a carrier of the germ of blackhead. If the turkeys on a blackhead infested farm are housed with the chickens they are almost certain to die — at least a large percentage of them will.

Let Us Get This Straight —Chickens and turkeys may be affected with three kinds of worms. (1) Tape worms, (2) the common intestinal round worms and (3) the hair-like worms found usually in the caecum or blind gut. We might aptly call this blind gut the chicken's appendix. The last named worm, which does not cause chickens a great deal of trouble is the one we are accusing of helping to spread the disease to turkeys. The other two worms we will speak more about later on. How does this take place? On a farm where the blackhead germ exists, the soil becomes badly polluted with the germ of blackhead. The soil also contains innumerable eggs of this small caecal worm. The young turkeys eat the worm eggs and these in turn hatch out in the intestines. After hatching, it is believed that the worm in some way injures the lining coat of the intestinal wall and this, you see, enables the germ which is already present in the intestines to enter the blood vessels, set up an inflammation in the wall of the intestine, and then be carried on to the liver. These two places, namely, the caecum or blind gut and the liver, are the only locations where signs of the disease will be found.

Serious Losses Can Be Prevented —It is likely that the germ can produce the disease in turkeys without the assistance of these worms but it has been clearly demonstrated that if we can keep this worm from heavily attacking the turkeys we will be comparatively free from serious losses. Many investigators claim that where losses would be around 95 per cent, these can be kept down to 5 to 10 per cent. Surely this is worth trying. The germ of blackhead is almost always present in the soil of an infected farm. We have now definitely convicted the worm of being the chief agent in the spread of the disease. Our job then is to make it possible for these turkeys to be kept free of the infestation of caecal worms.

Worms Plus —As a last word on this subject — worms alone cannot produce the disease. But — the worm plus the germs which are in the soil is the combination which encourages blackhead. All effort must be directed to keep the birds on clean soil that has not been contaminated by chickens with these small intestinal worms or their eggs.



Liver and gizzard of turkey with blackhead—spots on liver are ulcers of light yellow color, often with a greenish yellow border around them.

Symptoms of Blackhead —Turkeys can die of blackhead at any age although it is more common when they are very young or as Thanksgiving draws near. Little time need be spent on the symptoms of a sick bird. They just look sick and lag behind the rest of the flock. The heads do not have to be dark. They frequently have a yellowish or greenish yellow diarrhea. That is about all we can safely say as to what the sick birds look like. If that is the case, how are you going to tell it then? Open a dead bird. That is the only way it can be positively identified.

Examine just two places — the liver and blind gut, or the caecum. The germ starts operations in the caecum and from there is carried on into the liver which is the other place we observe. We will look for an enlarged caecum, which may be filled with a yellow, cheesy material. In the absence of this the caecum may be merely inflamed. When affected, the liver will show round spots or ulcers which often have a greenish yellow border around them. These spots on the liver resemble a rotten spot in an apple.

How About a Cure? —There is no cure for blackhead. Don't vaccinate for it either. There is no such thing. If your flock is affected with this disease put into practice the things we are recommending in this pamphlet.

Plan Will Prevent Other Ills —As mentioned before, turkeys may have other diseases too, but they are not so serious as blackhead. This plan will effectively control worms — both tape and round worms. The saving in time will permit the owner to treat them oftener for lice and mites. They are all together and easily caught and quite tame. The ravages of tuberculosis are more easily kept down. You will raise turkeys with less uncertainty that ever you did before. Under the common system the writer would not recommend any one to embark in the business of raising turkeys.

The Plan in Detail

The Best Breed —We are asked many times to designate the best breed of turkeys. We will side-step that question by saying that the breeds most commonly seen are Bronze, Hollands, and the Bourbon Reds. The popularity of the Bronze, out-strips the others because of greater size. The Hollands are usually chosen because of their placid disposition and the fact that they were not supposed to be roamers. In the East White Hollands are becoming more and more popular nowadays because they make a quick, economical, growth and make a beautifully finished 12 to 14 lb. turkey which is now the size most in demand. Bourbon Reds have quite similar characteristics.

Standard Weights

Breed	Adult Cock	Yr. Cock	Cockerel	Hen	Pullet
Bronze	36	33	25	20	16
White Holland	33	30	23	18	14
Narragansett	33	30	23	18	14
Bourbon Red	33	30	23	18	14
Black	33	30	23	18	14
Slate	33	30	23	18	14

Time to Select Breeders —The breeders should always be selected before any of the flock is marketed or fitted for market. This gives a larger number of individuals to choose from; it also eliminates the danger resulting from the final fattening of the breeders. The first part of November is a good time to select the breeders and they should not only be selected for what they are then, but also, when possible, for rate of growth during growing season and indications of early maturity.

How Many to Start With —Don't start with more than can be handled well. For the average farmer who makes somewhat of a sideline of his turkeys, six or eight hens should be enough. Grow into the business rather than grow out.

How Many Males —Select good strong males which have all the best breed characteristics well defined. Do not mate more than 10 or 15 hens to one male. It is considered best to use birds over a year old. This applies to the females as well. Never use small, undersized birds as breeders. If the hen is a good layer, she may be profitably kept for four or five years. One mating is enough for each clutch.

A FEW BEACON FED TURKEYS IN PORTO RICO
Grown at Guaynabo Poultry Farm Porto Rico Experiment Station
B. A. Wall, Supt.

About the Eggs —Eggs for hatching should not be kept over 10 days. A lot of trouble with low hatchability is the result of keeping eggs too long. The eggs should be collected each day and kept at an even temperature of 50 to 60 degrees. They should be turned over each day. Turkey hens will lay eggs in places prepared for them. Disguised boxes or barrels placed suitably will do very well. Some growers confine the birds until they have laid.

Feeding the Breeders —Years ago turkey breeders were fed mainly on corn and wheat but as the knowledge of proper feeding has increased, it has become more generally understood among turkey growers that corn and wheat or any other mixture of grains cannot constitute a complete ration for breeding turkeys and that these grains should be supplemented with a high quality breeders mash, containing plenty of animal protein, particularly plenty of dried buttermilk and dried skimmilk, also a liberal amount of fish meal and meat scrap together with high grade alfalfa leaf meal and a properly balanced mineral mixture. Furthermore, this ration should contain the proper amount of cod liver oil. Beacon Breeders Mash has been proved to be an ideal ration for turkey breeding stock and is widely used by turkey growers throughout the northeastern states. It fills all the above specifications for an ideal turkey breeder mash and has been tested and proved for the past seven years.

Method of Feeding —At least one month before beginning to save hatching eggs, the birds should be separated and placed in laying pens and at this time start the turkeys on a self feeder containing a good laying mash, preferably Beacon Breeders Mash, although Beacon's Cayuga Laying Mash will give good results.

Most turkey breeders in the northeastern states have their breeding pens made up, the birds dusted for lice, with sodium fluoride, and everything ready to go in the breeding pens by February 15th.

In addition to the Beacon Breeders Mash which should be kept before the turkeys at all times, a feeding of scratch grain, preferably Beacon Special Scratch Grain, should be given each evening. Do not make the mistake of over-feeding on grain during the breeding season. Fat turkeys, particularly Toms that are fat, are not good breeders.

Increasing Egg Production —If the turkey breeders do not increase rapidly enough in egg production to meet your needs for hatching eggs, the increase may be considerably accelerated by feeding one feeding a day of Beacon Breeders Mash wet up with water or skim milk. The birds should not be given at this time more than they will clean up in twenty minutes or half an hour and this feed should preferably be given at noon. This wet mash should gradually be decreased until it is discontinued altogether when the turkeys reach satisfactory production.

Grit, Shell and Charcoal —A good clean mica or granite (not limestone) grit or coarse gravel should be kept before the birds at all times in a convenient box. Clean oyster shell should also be furnished, being careful to purchase oyster shell which is free from clam and mussell shell, dust and fine particles. We especially recommend Reef, Pilot, and Pearly White brands of shell. A box of charcoal should also be kept before the birds. This will help in preventing any indigestion which is one of the troubles we have particularly to guard against in turkeys and which is no doubt an important contributing factor in many turkey diseases.

Summer Feeding —Heavy egg production is not desirable after the first of June as it is not advisable to set eggs after that time. Late hatched turkeys are much too hard to raise besides being too late to get the best weight for the holiday market. Therefore, hopper feeding of mash should be discontinued about June 1st and the birds given the daily noon allowance of dry mash, supplying just what the birds will clean up in about a half hour.

This reduction in mash feeding will serve to decrease egg production to some extent and will allow the birds to molt and regain their condition during the summer and fall. The summer program of feeding should be carried right through the fall and winter until the full feeding of mash is resumed again at the beginning of the next breeding season. Grain is usually fed twice a day during this period, a light feeding in the morning and a heavier one at night. It is well to use a mixed grain, especially during this period. Beacon Special Scratch Grains are highly desirable for turkeys at any time of year and particularly during this period. Too heavy feeding of corn will result in the turkeys being over-fat when they come into breeding season again.

Some of the hundreds of Fine Bronze Turkeys raised each year at the Burlington Turkey Farm, Stevensville, Pa.

Artificial Incubating and Brooding

Hatching the Eggs —Never set hen eggs and turkey eggs together. There are several reason why you should not. Eggs may be hatched under chicken hens, turkey hens or in an incubator. Turkey eggs can be hatched very well in an incubator and this method is gaining favor each year. It is safer in every way. Under this plan it is better to hatch with an incubator but the hen can be used. On the average farm a 100 to 250 hen-egg machine will be big enough.

Incubators —The machine should be set up a few days before the eggs are put in so that it is sure to be running properly. The starting temperature should be 101½ degrees with a standing thermometer. As hatching progresses the temperature will rise to 103-104 degrees toward the end. This is due to the generation of bodily heat by the developing poult in the shell. The eggs should be turned twice daily. A little additional moisture is needed and this can be supplied by placing in the machine a plate of sand which is constantly kept wet.

Turkey eggs hatch in 28 days. Newly hatched poults should remain on the egg tray of the incubator until thoroughly dried off. Then allow them to drop into the nursery after covering the burlap or wooden bottom with paper. Put a little dry sand in the nursery so that the young turkeys may get a little grit before feed. After all the poults are hatched and dried, remove the egg tray. Gradually reduce the heat to 95 degrees by lowering the flame and opening the door of the machine ever so little. The poults may be kept in the incubator nursery until they are 24 or 36 hours old or until they appear strong on their feet. They are then removed to the brooder.

Some growers start the hatches under both chicken hens and turkey hens and then transfer to the incubator for the last two or three days. This plan is not to be recommended.

Brooding —Brooding may be done with portable brood coops or the poults may be brooded artificially with a brooder house and hover. If at all possible use a brooder house and keep the poults away from the hens entirely after hatching. If one does not have a brooder house, perhaps a makeshift one can be provided to take its place. Brooding with either turkey hens or common hens is not nearly so safe as the complete separation of the young poults from the old hens. The brooder house enables the caretaker to keep them on clean ground and away from the source of blackhead infection. Poults may die of blackhead as young as 2 weeks.

The Brooder House —On page 14 you will find plans for a brooder house. If a brooder house is to be constructed it is a great advantage to have it set on skids as shown in the drawing. This enables one to move it frequently to new ground. If a portable brooder house is used be sure to have four openings or doors for the poults to leave the house. It this is done we will stake oft four runs as shown on page 16. These runs are 8 feet wide and 4 or 5 feet high. They are only temporary and are taken down each time the brooder house is moved. If this plan is followed the poults will be allowed to have run No. 1 the first week. The second week this run is shut off and the birds are allowed to go into run No. 2, the third week, into run No. 3, and the fourth week on run No. 4. This gives four distinct runs and is easily arranged if you have a portable brooder house.

If you should have a permanent brooder house four runs can be arranged in front of the building as shown in the drawing on page 17. If the soil about the brooder house is badly contaminated from chickens it will be very necessary to spade it up and turn it over thoroughly. If possible seed it down to oats or some other fast maturing crop. This will help renovate the soil. Between 200 and 300 poults can be handled in this 12 by 14 brooder house.

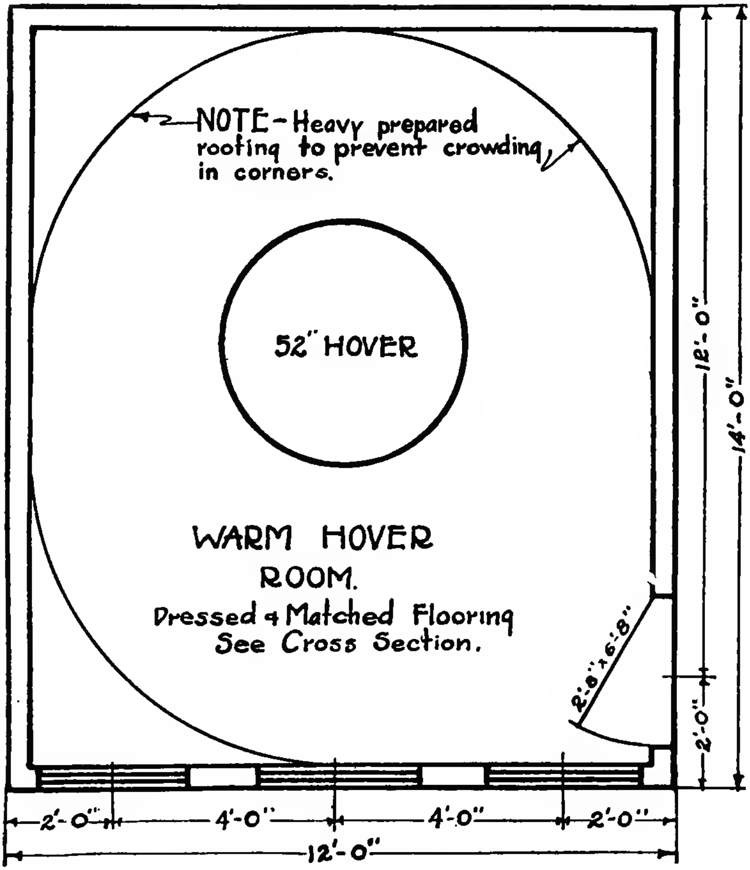
For heat in the house, a hard coal stove or any other heating arrangement that will maintain an even temperature of about 98 degrees may be used. As the birds grow older and as the season advances the heat is gradually reduced until they require little heat.

One of the greatest brooder troubles turkey raisers have is crowding and smothering. An 18-inch netting around the brooder room, the lower edge fastened to the floor a few inches from the wall and the upper edge to the walls will prevent most of the crowding losses. This cuts off the corners and eliminates the straight walls. It gives a bowl-shape and the sloping netting prevents a pack when the poults crowd. Many smothering losses occur immediately after the attendant leaves at night. If there are curtains in your brooder house, draw them a little at a time until the house is darkened. Or take a lantern to the house and when you are about ready to leave begin turning the flame down, a little at a time every minute or so until the room is dark. Move quietly and slowly. Do not excite the poults. Then edge carefully to the door and close it softly when you go out. Otherwise you may find smothered birds against the door next morning. They will surge after you move hastily and leave the room abrupty. Also do not use the brooder house as a storage place. One raiser lost several birds in a 10-quart pail. One jumped in through curiosity and others followed. Another man lost many the same way because he left an open barrel in his brooder house.

When the poults are about 8 weeks old and the weather is favorable they may be removed to the plot of ground set aside for this purpose. (See page 15.)

Natural Hatching and Brooding

If the entire hatching is done with hens a little different procedure is necessary. A chicken hen will cover 9 to 11 eggs. A turkey hen will cover

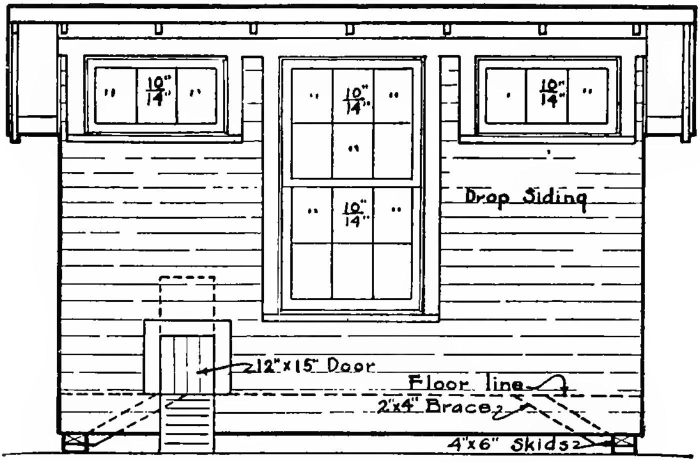

NOTE-Heavy prepared roofing to prevent crowding in corners.
52" HOVER
WARM HOVER ROOM.
Dressed & Matched Flooring See Cross Section.
2'-8"x6'-8"
12'-0"
14'-0"
2'-0"
2'-0"
4'-0"
4'-0"
2'-0"
12'-0"

FLOOR PLAN

Newly hatched poults sometimes forget where to get warm. A roofing paper fence is placed about the hover of the brooder house the first few days until the poults get acquainted with the stove and know enough to go to it when cold. It need be only a couple of feet high.

from 15 to 18 eggs. Be sure to rid them of lice before they are set. This can be done with sodium flouride. The boxes or barrels should be carefully cleaned to make sure that they are free of mites. Carbolineum makes a good spray to keep these pests away.

When to Hatch —In New York and other northern states, May is perhaps the best month to hatch. Don't have June hatched birds. They do not mature properly and usually are not profitable. If one is using the incubator and brooder method earlier hatching may be practiced. The middle of May should be about right for one who is using hens for hatching. In most years the weather is usually somewhat settled and outdoor brooding can be done. However, additional protection must be provided for the poults in damp or wet weather.



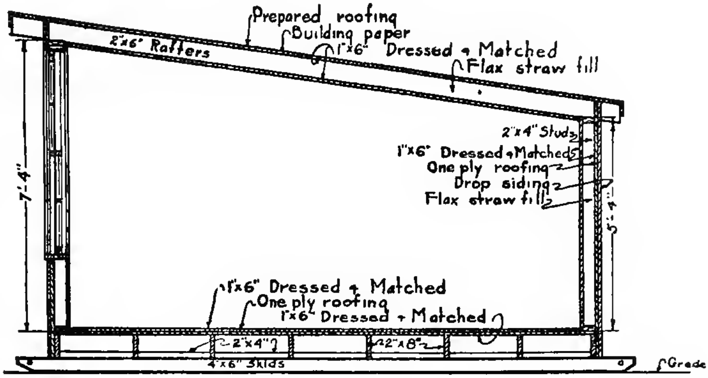
SOUTH ELEVATION

This is a front view of the portable brooder house. A door is cut in all four sides of the building to provide an opening to all four runs. The doors of the runs not in use are kept shut.

A Movable Brood Coop —In using the natural method of incubation and brooding, it is necessary to provide movable brood coops. These need not be expensive but must supply a shelter for the mother and her brood. After the eggs are hatched the hen and the young poults are placed in the coop on clean ground. The best place to put the coop is in an orchard or clover or alfalfa pasture. At any rate it must be on ground away from the farm buildings and on soil not contaminated by chickens. If there are several broods they should be placed several rods apart and moved once a week.

Keep the poults confined the first few days and after that they may be allowed to range. The mother hen, however, is not permitted to be outside the coop unless the coops are inside a field which is fenced with poultry wire and free from chicken associates. The same feeding methods are followed as with artificially raised poults. Complete feeding directions will be found in a succeeding chapter.

When poults are from 6 to 8 weeks old or even younger if the weather is fine, they may be removed to the rearing ground. From this point on, the future handling of the naturally and the artificially raised birds is the same.

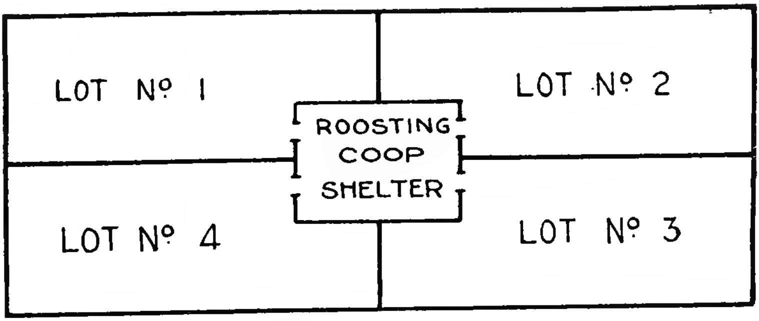


CROSS SECTION

This is a side view and shows the method of construction and arrangement of skids under the building.

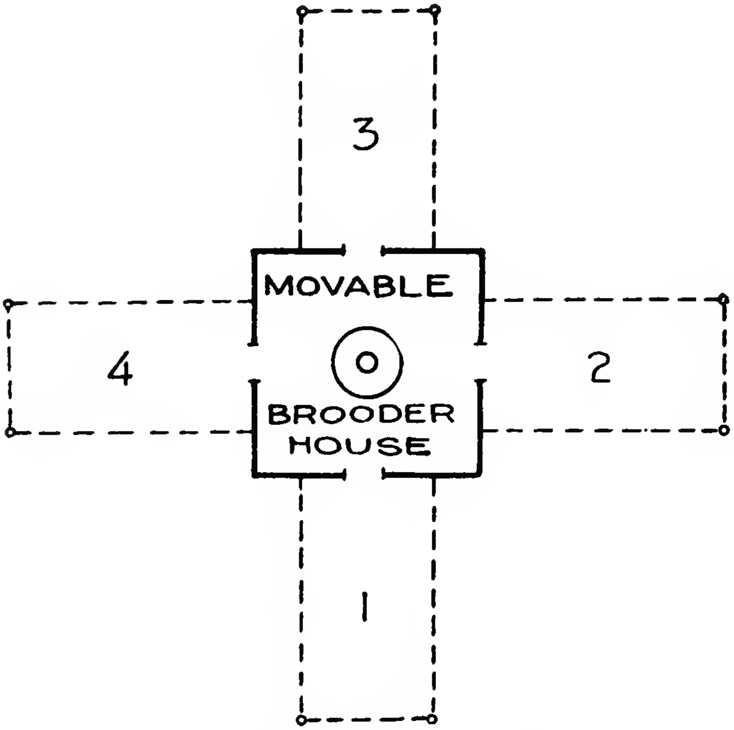
Poult Rearing Ground—This plot which we will term a rearing ground need not be especially large because 200 or 300 poults can be successfully kept on an acre until they are half grown. This acre should be selected in the corner of a clover or alfalfa field or orchard where chickens have not ranged to any great extent.

It should be fenced with poultry fencing to keep the chickens out and the poults in. This fence need not be over 6 feet high. If some of the birds should show a tendency to fly, one or both wings may be clipped. However, brooder



This is a four lot rearing ground for poults from the brooder. The shelter in the center has four openings or doors, one leading into each lot. The birds are placed on this rearing ground when they are from six to eight weeks old, depending upon the weather. They are kept on Lot No. 1 for a month, then they are moved on to Lot No. 2 for a month, etc. If the birds are driven into the shelter each night for a week they will not cause trouble. The floor of the shelter should be cleaned carefully each week.

raised poults do not seem to acquire this habit so readily as hen brooded poults. Just below you will find a diagram of a convenient way to lay out the rearing ground. This may be modified to suit local conditions but do not forget that it is planned mainly to provide rotated lots on clean ground and away from soil contamination.

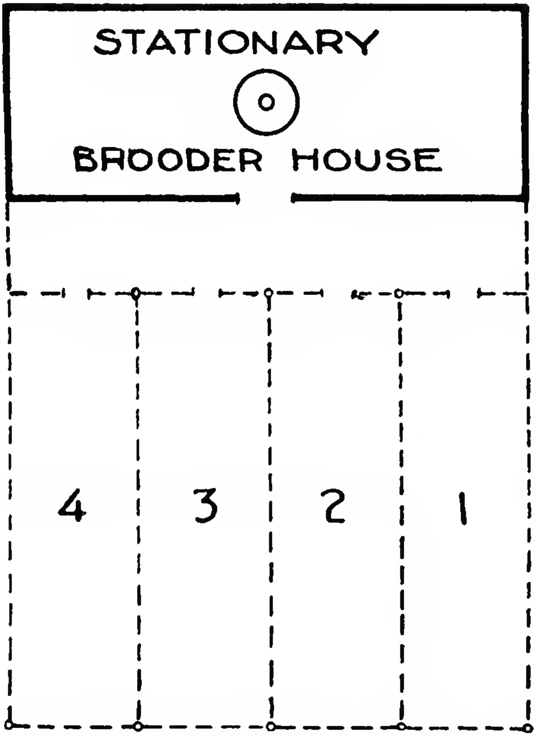


Dotted lines indicate poultry fencing about 4 or 5 feet high. This arrangement can be altered to suit local conditions. Poults are kept in these yards until time to go to the rearing ground at about 4 to 6 weeks of age, depending upon the weather.

Don't Forget This —As long as the turkeys are kept on clean ground and away from chickens there should be no losses from blackhead. If blackhead should appear it is definite proof that the soil was soiled with chicken worms or worm eggs.

Approximately 200 birds can be kept on this rearing ground until they are half grown. Turkeys require lots of greens or forage. When they begin to appear crowded enlarge the size of the individual lots and keep rotating. Along in August or September during threshing time you may be tempted to let them out in the grain field. Don't do it.

This plan of confinement requires feeding the flock. Some people think that unless grasshoppers are thick — all is lost. Feed them as outlined in the following schedule It will pay big dividends. Turkeys can exist without feeding when they have the run of the farm but they will do a great deal better under this plan of confining and feeding.



Dotted lines indicate poultry fencing about 4 to 5 feet high. This arrangement can be altered to suit local conditions. Poults are kept in these yards until time to go to the rearing grounds at about 4 to 6 weeks of age, depending upon the weather.

The Week Before Hatching —Prepare the brooder and exercise pen, first clean and wash the brooder including both hover and chicks' exercise pen with strong soap suds or lye; then disinfect carefully. Run the brooder for several days to become skillful in its operation.

First Day —Newly hatched poults should remain on egg tray of incubator until thoroughly dried off. Then allow them to drop into the nursery after covering the burlap or wooden bottom with paper. Put a little dry sand in nursery so that the young turkeys may get a little grit before feed. After all the poults are hatched and dried, remove egg tray, gradually reduce heat to 95 degrees F. by lowering flame and by opening door of machine slightly.

Second Day —Keep poults in the incubator nursery until 24 or 36 hours old or until they seem quite strong on their feet. Then remove them to a brooder, the floor temperature of which should have been regulated to 95 degrees F. which temperature should be maintained for several days.

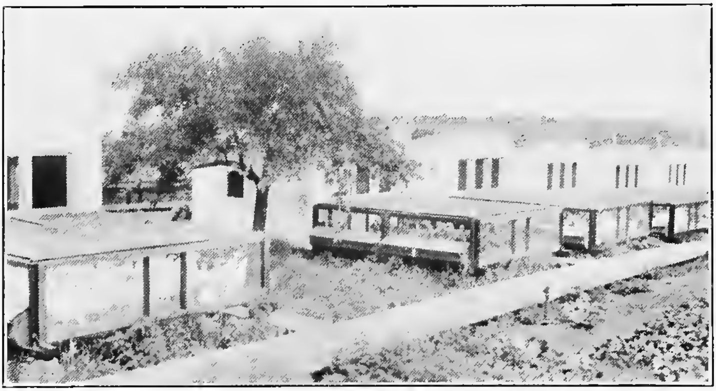
Platform Rearing

The Ideal Way —The use of platforms, especially of 1″ x 2″ electric weld, 14 gauge wire, is replacing the multiple yard method described on preceding pages.

Tobacco Not Needed —The use of an increasing amount of tobacco powder has been found beneficial since it kills the caecum worms which are the hosts of blackhead. With wire platforms tobacco is not needed for blackhead is not a problem where poults are reared on wire. From 2 to 8% of tobacco powder (1-1½% nicotine guaranteed) must be used, mixing it fresh with the feed once or twice each week. It makes the feed much less palatable, sometimes causes eyes to stick shut and adds both extra labor and expense.

Use wire platforms and forget disease and parasite problems with turkeys. See illustration page 3 and others in these next few pages.

How Long on Wire —*Poults should always be kept on wire for twelve weeks, if this method is used at all, but will do better if left on the platforms right to killing time. For breeders transfer to range at 12 to 14 weeks of age.*



BROODING IN CONFINEMENT
Flying Horse Farm, South Hamilton, Mass.

Concrete and board platforms have the disadvantage that they become very wet and filthy after a rain and should therefore be cleaned immediately after each rain. Wire platforms are much cleaner and are to some extent, self-cleaning, but the ground underneath them must be cleaned often or else the accumulating manure will draw flies and the birds may become heavily infested with tape worms from the eggs carried by the flies.

Where wire platforms are used, droppings on the ground should be covered with a light layer of acid phosphate every few days. This will keep down odors and tend to drive away flies. Of course it is possible to use fly screening over the whole platform and around the outside edge clear to the ground so that no flies can get to the birds.

Let's Get This Clear —Growing turkeys will make better growth if they are kept on the platforms at least until twelve weeks of age. The growing turkey has very little resistance to diseases and parasites until it reaches twelve weeks of age. After this, resistance increases rapidly and mature turkeys have a very high resistance to diseases and parasites.

How to Construct Rearing Platforms —If the platform is made of concrete, it should be slanted at the rate of about six inches every twelve feet. This will make it easy to clean. The platforms should always be washed off with the hose as the final stage of the cleaning.

Wire platforms should be made of one inch square octagonal 1″ x 2″ mesh, 14 gauge, electric weld wire. Unless a very heavy wire is used, it will soon break down. This wire usually has to be ordered especially for the purpose, as ordinary hardware stores, even in good sized cities, do not carry this extra heavy wire. DO NOT BUY WIRE LESS THAN ONE INCH MESH.

Mr. and Mrs. John Burlington (Stevensville, Pa.) start all turkeys in this long brooder with concrete, fly-screened rearing porch. Such conditions plus Beacon Feeds make prize winning turkeys.

It is important in constructing a wire bottom platform to see that the supports are planed off V-shaped at the top so that here is no wide space, where the wire rests on them, on which droppings may accumulate. 1″ x 6″ boards set on edge make good supports for the wire platform. 2″ x 4″ are too wide and should never be used unless the top edge is planed off to a narrow V. Otherwise, manure will accumulate on the top edge and disease is almost certain to start under these conditions.

The best supports for wire that the writer has ever seen were steel fence posts laid so that the edge of the angle supported the wire. The wire was nailed to the wooden frame all around the outside and laced together with soft iron stove pipe wire where the strips joined. This left no places for droppings to accumulate.

The dirtiest place on a rearing platform is usually right where the birds enter the house from the platform. The frame supporting the wire should be cut away at this point so that the droppings will not accumulate on the threshold but will fall through underneath.

Rearing platforms are recommended particularly where the soil available for a rearing range is badly infested with parasites or diseases.

Preparing the Brooder House

Disinfecting —Regardless of whether the house was cleaned last fall or not, sweep ceiling, walls and floor thoroughly. Then scrub floor and sidewalls with a solution of lye (use one pound of lye to 15 gallons of boiling water). Put the solution on as hot as possible. (Coccidia are not killed by 5% lye solution at 140 degrees F.—Michigan Experiment Station.) Use the lye mainly for cleaning, not with any idea that you will kill coccidia with it. Worm eggs, if any are present, probably will be killed.

Rely on Torch to Kill Germs —A practical way to kill coccidiosis and blackhead germs is by using a special flame throwing blow-torch which has been developed for this purpose. This will do a 20 foot by 40 foot house on 20 cents worth of kerosene and do a better job than any disinfectant made. The blast is so strong the fire danger is practically nil. Any splinter catching fire is blown out at once automatically, as a rule. (Keep a pail of water handy any way.) The torching should be done immediately after the house is cleaned with lye, preferably while still wet. (It is well to be sure your insurance permits use of torch.)

Disinfectants —Coccidia and other germs may also be killed by scrubbing the house with hot water (no lye solution), scraping thoroughly, then finishing with a 1% solution of Iodine Suspensoid Merck or a 10% solution of Compound Cresol or its equivalent. Painting with Carbolineum is also effective.

Keep Visitors Out of the Houses —Do not enter any brooder house without wiping the feet in a box of sawdust, saturated with undiluted disinfectant, and do not allow others to do so. It is better to keep all visitors out of the pens. It is just as necessary to avoid carrying tools from one house to another without disinfecting them.

Wash the brooder including hover with strong soap suds or lye, then disinfect carefully.

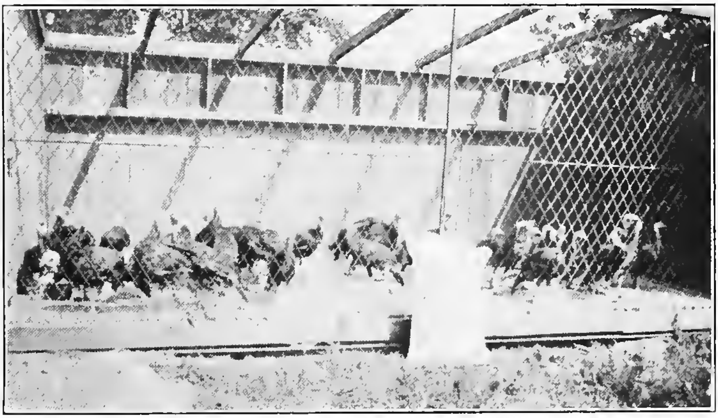
First Day—Newly hatched poults should remain on egg tray of incubator until thoroughly dried off. Then allow them to drop into nursery after covering the burlap or wooden bottom with paper. Put a little dry sand in nursery so that the young turkeys may get a little grit before feed. After all the poults are hatched and dried, remove egg tray, gradually reduce heat to 95 degrees F. by lowering flame and by opening door of machine slightly.

Second Day—Keep poults in the incubator nursery until 24 or 36 hours old or until they seem quite strong on their feet. Then remove them to a brooder, the floor temperature of which should have been regulated to 95 degrees F. which temperature should be maintained for several days.

Wire Floor Inside the House —While wire mesh on 1 inch x 4 inch x 3 foot frames is sometimes used inside the brooder house, the writer prefers litter kept clean as described above. This avoids floor drafts which may occur where wire is used. It avoids the necessity for running the stove at a higher temperature, which must be done with wire floors. It also eliminates the objectionable odor and more important, it avoids the serious labor of keeping the wire clean where the frames adjoin. This focal point of infection, if not kept sanitary, will result in blackhead and coccidiosis in the flock as severe as on any dirty wood floor, for the poults usually wander around picking at the droppings on the frames at joints.

Poults Reared on Floors

Poults Reared on Floors —**Litter**— Shavings or clean sand are preferred, especially for the first six weeks. Poults will not eat enough shavings or any other litter to do them any harm if enough feed trough space is furnished. Peat moss, cut hay, cut straw., etc, can be used if easier to get locally.



Platform rearing as practiced by J. Heaney, 1309 Reservoir Ave., Bridgeport, Conn.

Prevent Disease —**Change** litter where **poults have roosted every morning** and change **all** the litter once each five days.

Roosts—Low roosts made of 2 x 4's or 2 x 3's raised 18 inches off the floor, on movable frames, may be used after the birds are 3 to 6 weeks old. The more they roost the less chance of loss by crowding.

Lights on Poults —Lights on poults are mainly of value in preventing crowding at night.

Too much light will result in over stimulating and feathers will curl forward. The poult will begin to droop and blackhead is likely to set in.

It is best to use one 10 watt light for each 120 square feet of floor space.

Place the light so it shines on the feed and water containers, but keep the space under the hover in comparative darkness.

Battery Rearing

For Poults Reared in Batteries —Our experience with raising poults in batteries has not been particularly satisfactory. Some lots have done very much better than others for no apparent reason at all. We believe that the great problem in successful production of turkeys in batteries is to get the young poults to eat enough feed during the first few weeks particularly. They do not seem to get accustomed to battery conditions as readily as chickens and are often very timid about eating. In fact, observation has convinced us that a considerable percentage of most hatches will eat little or no feed the first few days if they have to reach their heads through the slots in the side of the battery compartments in order to get at the feed and the same is true of water. Therefore, in starting poults in batteries, we always prefer to put the feed and water inside, at least for the first week, and we find it especially necessary to use milk for drinking instead of water. In other words, everything possible must be done to increase the total intake of nutrients by the poults if we are to get satisfactory results with them in batteries.

After the poults are four to six weeks old, they apparently do very much better in batteries being less timid and more inclined to put their heads through and eat a normal amount of food. However, if the weather permits, we very much prefer to raise poults by the other method described in this booklet, rather than to resort to batteries.

It is true that batteries work particularly well in a very cold climate for the early part of the season and in such locations, it may be necessary to use batteries.

Turkeys of course can also be fattened in batteries for market and birds thus fattened, using Beacon Crate Fattener Feed fed wet, (220 pounds water to 100 pounds feed) five times a day and giving no other feed and no water, will secure a very beautifully finished carcass, but turkeys do not stand this confinement as well as chickens and also, if they have to be transported any great distance to market, much of this weight is lost unless the birds are dressed at home.

Our experience shows that some strains of turkeys appear to accustom themselves to batteries very much better than others. Whether this is due to less of the wild blood in these particular strains or not, we do not know, but it is safe to say that any one attempting to use batteries should experiment a little with various strains of turkeys before purchasing a large number of eggs or poults from one particular strain, for rearing in batteries.

Feeding Poults

Beacon turkey feeds are put up in new, clean, white bags. Old bags should never be used as they are very likely to carry disease germs or parasite eggs. Directions for feeding should be followed exactly as given below. This feed plan was worked out in cooperation with one of the most famous turkey growers in eastern United States, and has given outstandingly successful results year after year. Both the Beacon Turkey Starter and Beacon Turkey Growing Feed are complete rations. Nothing should be added except as noted below under certain conditions. The hopper system of feeding, as used with these feeds, decreases the danger of parasites and diseases as the clean feed goes directly into the bird without coming in contact with infected litter or floor.

Feeding Schedule

First Day —Give the poults no feed until 24 to 36 hours after hatching.

Second Day —Wet Beacon Turkey Starter with water and mix well to a crumbly mash. Feed twice a day. Between these feeds, give the poults what they will clean up of Beacon Turkey Starter dry. The first feed should be placed in shallow dishes or on top of heavy paper or egg case tops, placing the feed in small piles. After four days, replace the above with sanitary troughs or hoppers and keep the Beacon Turkey Starter before the birds at all times. Beacon Turkey Starter and Beacon Turkey Grower contain a liberal amount of the finest alfalfa leaf meal. Therefore green food is not necessary. Many lower grade rations on the market include little or no alfalfa leaf meal and of course with such rations it is absolutely necessary to feed a liberal supply of fresh green feed which is often hard to obtain in the proper condition and which requires extra labor to get. Furthermore, fresh cut green feed may be dangerous as it frequently carries coccidiosis germs and other infection.

Beacon rations contain so much milk that it is not desirable to feed extra milk. Here again our recommendations must differ from those given for lower grade feeds which require large amounts of liquid milk to be fed with them in order to supply the deficiency existing in the feed. Beacon rations all contain a very liberal amount of milk, in fact, the proper amount which has been determined by careful research work to be best adapted for the entire growing period of the turkeys.

Water —Provide a constant supply of fresh water in clean sanitary fountains which should be washed out thoroughly and scrubbed with a brush at least once a day and preferably twice.

Grit —Keep a supply before the poults at all times. Good, clean gravel will do as well as any commercial grit. Beacon turkey feeds contain the proper amount of minerals. It is not necessary to furnish minerals through the grit and the gravel is usually harder, therefore a better grinding agent than the soft limestone grits often sold commercially. Commercial grits may be used successfully, if **mica** or **granite.**

Cod Liver Oil —**Beacon Turkey Starter contains concentrated cod liver oil, made under United States patents.** The concentrated oil not only insures a vitamin potency which is retained in the feed for a long period of time, but also does away with the addition of a large amount of fish fat to the ration which in many cases was the cause of digestive and liver trouble where the ordinary cod liver oil was used.

After Four Weeks —Change gradually to Beacon Special Turkey Growing Feed, keeping this in front of the birds in the dry form at all times. **Growth may be speeded up somewhat by continuing the crumbly wet mash feeding it once a day only,** but care must be exercised to limit the quantity of the wet mash. Otherwise, digestive troubles are very likely to follow. **Beacon Turkey Growing Feed also contains con-**

centrated cod liver oil, as experiments have shown that better growth and development occurs with cod liver oil even if turkeys are reared on range, perhaps because they continually seek the shade when there is sun enough to be worth anything.

Feeding Grain —No grain need be fed until six weeks before the turkeys are to be marketed. Then feed Beacon Scratch Grain or Beacon Special Scratch Grain in self-feeding hoppers, but be sure to keep the mash hopper full of Beacon Turkey Growing Feed.

WHITE HOLLANDS ON RANGE
Sunlight Turkey Farm, Inc., Granville, Vermont

If you follow preceding directions carefully, the birds will be well fleshed with good firm meat and in top-notch condition for securing the highest price at marketing time. Do not hesitate to write us about any special problems which you may have.

Grit —Keep a supply before the poults at all times. Gravel grit will do as well as any. Soft grits, such as limestone, should not be used. Mica or granite commercial grit is excellent.

USE NO OTHER SUPPLEMENT

CLEAN FOOD
CLEAN WATER
CLEAN HOUSES
CLEAN RANGES

INSURE SUCCESS WITH TURKEYS

Ailments of Turkeys

Lice —Many poults die or are seriously injured by lice. This is quite unnecessary because they are so easily controlled. If you are using hens for hatching be sure to delouse the hens before the little ones are hatched. If this is done lice are not so likely to appear. The common kinds of lice are the head and body varieties. The head lice can usually be eliminated by the application of lard or vaseline to the head.

The body lice, which are commonest, are best handled by the use of sodium fluoride. This is a white odorless powder which can be purchased from any drug store. Before the poults hatch apply several pinches of the powder to the skin of the sitting hen. Push back the feathers and rub the powder on the skin. The hen will now be clean and the young poults will not be exposed to lice as soon as they are hatched. Sodium flouride can be used on the young poults after they are a week old but use only about two small pinches. Apply this the same as to the older birds.

Mites —If poults are brooded artificially in a brooder house be sure this is free from mites. If the poults are to be raised by their mothers with moveable brood coops, be sure to clean the coops thoroughly before putting them to use. The best thing to use is carbolineum. This liquid is best applied as a spray but can be brushed on in the case of a brood coop. Be sure to let it dry out fully before the birds are put in, otherwise the fumes may be too irritating. One good application of this is often sufficient for the year. If carbolineum cannot be secured, waste crank case oil may be used though not so effective or lasting.

Roup —In adult or half grown turkeys roup is more often seen as a swelling or pouch under the eye. In this case the inner passages of the head become affected. When this pouch is seen the eye is usually clear unless the swelling extends to it. In young poults this disease appears much the same as in chickens. There may be a slight discharge from the eyes and nose which is often followed by a swelling of these parts.

The best treatment for the eye and nose form is the application of a mild solution of boric acid to the eye and nose. Dissolve about a teaspoonful of boric acid in a quart of warm water and use this as an eye lotion. Repeated treatments and giving the birds protection from bad weather are usually successful.

The older birds with the swell or pouch in the face are best handled by lancing, opening the pouch with a sharp pointed knife. This will allow the pus to drain out. Wash it out with the boric lotion. A small strip of cotton tape might be soaked in iodine and packed in the wound. This should be left in for a day or two so that the wound can get good drainage.

Tuberculosis —Tuberculosis is not nearly so common in turkeys as in chickens. However, it does occur and seems to be on the increase. This is no doubt due to the fact that the disease is so common in poultry and those on farms where the poultry flock is badly infected we may expect also to find the turkeys infected, especially if they are permitted to range together about the farm buildings.

Tuberculosis is a germ disease and is very contagious. The mature birds are more often diseased. The symptoms are much the same as in chickens. But don't forget that symptoms do not mean much because all sick birds look pretty much alike. The bird may get thin, and develop a diarrhea the same as in blackhead. On this account it is difficult to distinguish from that disease. The best way to be sure is to open a dead one.

Look for yellowish or grayish white spots on the liver, spleen (that round body under the liver) and intestines. On the intestines these spots may look like warts. These spots or lumps are hard and dry. You can tell tuberculosis from blackhead by the character of the liver spots. In blackhead the spots are soft and mushy with greenish yellow borders.

There is no cure for tuberculosis. If the disease gets a firm foothold in the flock it is best to get rid of all of them and start over. If the plan of separation of the turkeys from the farm flock of chickens is followed this trouble will not be so likely to occur. If you get stuck and are unable to tell this disease from blackhead send a sample to the Veterinary Division of your own Agricultural College or to the laboratory of the Poultry Service Department, Beacon Milling Co., Cayuga, N. Y. Here it will be examined free of charge.

The Bird Tick —The bird tick is relatively uncommon except in certain sections. In these places it is quite a pest and the cause of considerable losses. Don't mistake this for the fowl tick. It looks something like a wood tick to the average observer. Some folks take it for a bed bug. It seems to prefer to attach itself to the skin about the head and neck. It acts like other ticks, burrows into the skin and causes irritation. If present in large numbers, bird ticks will kill the poults. There is no treatment except to pick them off by hand. It will be necessary to go over the poults often and pick them off and destroy them, preferably by fire. These ticks very likely get on the birds which range on ground previously covered by wild birds such as pheasants and partridges.

Worms and Their Control

There are many species of worms found in poultry. For purposes of control these may be divided into **round worms** and **tape worms.** The former may be divided into two groups, the **large round worms** and **caeca** or **pin worms.** The tape worms also may be divided, the large and the microscopic, both being common among flocks in the East.

Worms of all kinds cause two distinct types of damages (1) decrease of nutrient assimilation by the bird and (2) poisoning from toxic material excreted by the worm. One of these poisons destroys red corpuscles in the blood causing anemia as shown by pale head parts and weakened condition. Another poison acts on the nerve centers causing paralysis.

In round worm infestation the first injury seems to be the more important, with tape worms the second often appears earlier and affects the nerve centers so that the bird is paralyzed before it loses much flesh.

Birds affected by worms, more particularly tape worms, often show rich orange yellow shanks while at the same time they are coming down with paralysis.

Round Worm Control —Formerly the use of 2% of tobacco powder (1½% to 2% nicotine) was the favorite method of eliminating round worms. The difficulty with any such flock treatment, however, is that the birds which need the treatment the worst are frequently in no condition to eat and hence do not get enough nicotine to do them much good. Tobacco makes the mash unpalatable. Furthermore the tobacco must be mixed with the mash once or twice each week to insure sufficient nicotine, as strength is lost rapidly on exposure to the air.

One Flock of Young Bronze Turkeys on the farm of Louis Tyminsky, New Rochelle, N. Y.

If it is certain that only round worms are present (and such a condition is becoming less and common), the nicotine sulphate capsule treatment is to be recommended or the Nema Capsule containing tetrachlorethylene may be used.

Where, as is most common, several types of worms are present one of the "combination" treatments described below should be used.

Tape Worm Control —These flat, white, segmented worms appear to be on the increase in most poultry flocks, particularly in the intensive poultry centers.

The great difficulty in tape worm control is to get a vermicide which is strong enough to get the whole worm (including the head which is often imbedded deeply in the intestinal wall) and still avoid killing the bird.

Any effective worm treatment will disturb egg production to some extent and some will almost stop production in the flock for a week or ten days. **There is no 100% tape worm remedy.**

Treatment for Tape Worms —Where tape worms alone are present in the flock the Kamala Capsule treatment is often recommended but our experience has been that effects are rather uncertain, whether due to variation in the strength of the drug or some other cause we do not know.

We have known Kamala apparently to have no effect on the worms and again this treatment was followed by heavy mortality in the flock. For this reason we prefer to recommend one of the combination treatments given below.

The lye treatment is no longer widely used, experience showing that it is highly uncertain as to results.

Combination Worm Treatments—These are strongly recommended because it is seldom now-a-days that a flock is not infested with several types of worms, if any.

Iodine Treatments

Iodine as a vermicide was first perfected by Dr. W. L. Chandler of Michigan Experiment Station. Dr. Chandler found that **iodine in the free or uncombined form is deadly to worms** even when used in very small amounts, moreover **it acts on all types of intestinal worms.**

Iodine in a New Form—It is a well known fact that various species of intestinal parasites are universally present on turkey ranches and poultry farms. Iodine, in a new form (known as Colloidal Iodine Chandler, and marketed under the trade name of Iodine Vermicide Merck), is to the best of our knowledge the only chemical which can be used in a practical way that will kill not only round worms (Ascardia) and tape worms in turkeys and chickens, but also their eggs and larvae. Iodine Vermicide is administered directly into the gizzard with a dosing appliance to allow the *free* iodine which it contains to be carried throughout the length of the intestines immediately. When the *free* iodine in the product comes in contact with parasites and their eggs they are quickly destroyed.

Iodine Vermicide Merck is valuable also in some diseases other than worms. For instance, it is widely used in the treatment of "Blackhead" of turkeys. Just how it exerts a favorable effect we are frank to admit, is not thoroughly understood. Undoubtedly, it is partly due to the vermicidal action as it is a well known fact that the ravages of "Blackhead" are more prominent in cases of wormy birds. Whatever the nature of its action, the fact remains that the popularity of Iodine Vermicide Merck in the treatment of "Blackhead" has increased by leaps and bounds during the past two years. Today its use is considered standard practice among successful turkey raisers in the eastern sections of the United States.

Dosing—No vermicide is known which will accomplish the desired results when mixed with feed for the wholesale dosing of birds. Individual dosing is therefore required. It is absolutely necessary for Iodine Vermicide Merck to be delivered directly into the gizzard which is easily accomplished when using the one-man method of dosing with the improved dosing appliance. Do not fast the birds prior to dosing as this is not necessary and only interferes with their normal feeding routine, although it is better to have the crop not more than half full. No purgatives are necessary before or after dosing. Iodine Vermicide Merck is specially prepared to produce results when there is a moderate quantity of food and mucous in the intestinal tract. Any extreme deviations from this condition will naturally influence results.

On small turkeys the technique of dosing will be the same as the one-man method used when treating chickens.

Place the bird's legs between the operator's knees and cross the right leg over the left for the purpose of holding the bird. The head and neck are then stretched in a horizontal position so that the neck is pointed to the right of the operator to permit the crop to drop down and offer a clear passage to the gizzard. The bird's head is held with the left hand, the beak being opened and held open by squeezing the base of the beak with the tumb and fore finger. The other fingers should then be relaxed so as not to retard the passage of the dosing appliance. The filled dosing appliance is inserted with the right hand and only enough pressure used to allow the tube to slide into the gizzard. Too much pressure is liable to puncture organs and kill the bird. Compress bulb slowly, taking about 5 seconds to empty into gizzard. Too much pressure on the bulb is liable to force the liquid back into the crop, delaying its passage to the intestines, and thus lowering its efficiency. **It is important that the material be injected directly into the gizzard, and not into the crop.** The dosing appliance should pass across the opening of the crop, through the proventriculus and into the gizzard.

After administering a dose, withdraw tube from bird before allowing air to enter bulb. Then place the tube in the liquid as far as possible, and express the air quickly into the Vermicide. This procedure will be sufficient to keep the material thoroughly mixed during the time of using. The bottles into which the diluted Vermicide is transferred for storage should be tightly stoppered and kept in a cool place. Particularly so if it is to be kept for any length of time.

In the case of all except the young turkeys it will probably be necessary to have the services of an assistant. The turkey is held by one man, who holds the bird's legs between crossed knees as in the case of chickens, so that the head is pointed to the right of the man holding the bird. The assistant stretches the neck and inserts the dosing appliance.

Time of Administration—A great many prominent turkey raisers administer Iodine Vermicide Merck three times to each poult before it becomes full grown. This has proven well worth while, but this number of treatments is not essential under ordinary circumstances. The following suggestions may be considered as a basis for a dosing schedule: The first dose is given when birds weigh about 2 pounds. The second dose is given when birds weigh about 6 pounds. The third dose is given early in October, just prior to marketing.

Iodine Vermicide Merck should always be diluted with clear water. Follow the directions on the 1 pound bottle. When properly diluted, the contents will treat 250 poults using a ½ ounce dose, 125 poults using a 1 ounce dose, 62 adult turkeys using a 2 ounce dose.

Use of dosing appliances—There are three sizes of dosing appliances. These are made entirely of rubber and are manufactured specially for the administration of Iodine Vermicide Merck.

The ½ ounce dosing appliance is used for administering Iodine Vermicide Merck to poults and chicks weighing about 2 pounds.

The 1 ounce chicken dosing appliance is used for administering Iodine Vermicide Merck to larger poults and for chickens weighing from 2 to 5 pounds.

The 2 ounce turkey dosing appliance is used for administering Iodine Vermicide Merck to turkeys weighing more than 5 pounds.

The exact number and time of doses will, however, depend on the condition of the poults and other factors.

Feeding of Colloidal Iodine —The feeding of small amounts of Iodine Suspensoid Merck (Colloidal Iodine Chandler) has been practiced extensively during outbreaks of coccidiosis of chickens. Iodine in this form appears to be particularly valuable in assisting the birds to overcome the effects of toxic substances resulting from infection with coccidia. This use has spread to the turkey industry. The Suspensoid is being fed in the wet mash or drinking water supplemental to the dosing with Iodine Vermicide Merck.

For feeding purposes, the bottle cap full (1 dram) of Suspensoid is mixed with sufficient feed or water for 200 chicks or at the rate of 4 miligrams per bird per day. This same quantity of Iodine is provided for adult birds and young chickens. Metal containers should not be used when Iodine Suspensoid Merck is fed.

Diagnosis — A careful laboratory examination, including microscopic examination of the tissues, is the only real guide to accurate prescription for the flock, in case of trouble.

The Beacon Laboratory is available to customers without charge, or send birds to your nearest state laboratory. Ship alive, **by express** if possible. If dead, chill on ice immediately and then insulate with many layers of paper, box up and ship **by express.**

Prevent Reinfestation —Spending time and money on worm treatments is useless if the flock is allowed to become reinfested. Flies are carriers of worm eggs and must be kept down. In many sections it is necessary to screen all openings in the poultry houses to keep birds free from worms.

Manure attracts flies and also promotes reinfestation by round worms. Round worm eggs develop in 14 to 21 days after they are passed out of the bird's intestine and when picked up by the bird (usually from infested droppings or soil) they quickly develop into full sized worms again. Tape worms must pass through an intermediate host, the fly, before they can reinfest birds.

Useful Hints

Keep manure away from the turkey plant and from all soil on which turkeys are to be ranged.

Screen all manure pits and dust the pile with acid phosphate to kill odors and keep flies away.

Wire all perches underneath and down to the front edge of the dropping board, with **heavy** two inch mesh wire 1″ x 2″, 14 gauge electric weld preferred. (Light wire soon breaks down.)

Many poultrymen use a hinged board or lattice work in the front instead of wire. This is more permanent and eliminates sagging wire where the hens alight when going to roost.

The above also aids in obtaining clean eggs from the breeding flock.

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